9100210

THIE UNITED STEATES OF ANTERIOA

TO ALL TO WHOM THESE; PRESENTS SHALL COME:

S and W Seed Company

Williereas. There has been presented to the

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen years from the date of this grant, subject to the payment of the required fees and periodic replenishment of viable basic seed of the variety in a public repository as provided by LAW, the right to exclude others from selling the variety, or offering it for sale, or reproducing it, importing it, or exporting it, or using it in producing a hybrid or different ty therefrom, to the extent provided by the Plant Variety Protection Act 1542, as amended, 7 u.s.c. 2321 et seq.)

ALFALFA

'SW 14'

In Ecotimony Minercot, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 30th day of September in the year of our Lord one thousand nine hundred and ninety-three.

Attest:

Tenseth Newers

Plant Variety Protection Office Agricultural Marketing Service

Secretary of Agriculture

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Office, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB #5081-0055), Washington, 20250.

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

or management and budget, raperwork reduction Project (olina #036)	-bossy, washington, zozso.	TONIN ATTROVED:	5116 0301-0233) Expires 113 113 1
U.S. DEPARTMENT OF AGRICULTURAL MARK	RKETING SERVICE	N CERTIFICATE	Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421 Information is held confidential unit
(Instructions of APPLICANT(S) (as it is to appear on the Certificate)	on reverse)	2. TEMPORARY DESIGNATION OR	certificate is issued (7 U.S.C. 2426). 3. VARIETY NAME
S and W Seed Company		EXPERIMENTAL NO. SW 14	S W 14 9 MW 1993
		5. PHONE (Include area code)	Turni Tit
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP)		5. PHONE (Include area code)	FOR OFFICIAL USE ONLY PVPO NUMBER
P. O. Box 235		(000) 0010707	9100210
Five Points, CA.93624		(209)8842535	
			[July 8 1991
6. GENUS AND SPECIES NAME	7. FAMILY NAME (Botan	ical)	Time N
Medicago sativa L.	Leguminosae	A. A	G A.M. P.M
8. CROP KIND NAME (Common Name)	9.	DATE OF DETERMINATION	F Filing and Examination Fee:
Alfalfa		May 1 1991	S Dark
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF OR	GANIZATION (Corporation, par	tnership, association, olc.)	1 July 8,1991
Partnership			C Certificate/Fee:
11. IF INCORPORATED, GIVE STATE OF INCORPORATION	12. D	ATE OF INCORPORATION	E : 250.00
· 			D Lent. 16 1993
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY,	TO SERVE IN THIS APPLICATI	ON AND RECEIVE ALL PAPERS	The state of the s
Kautz Agronomic Services 12899 Ave. 336 Visalia CA. 93291 14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (a. X) Exhibit A, Origin and Breeding History of the Variety. b. X Exhibit B, Novelty Statement. c. X Exhibit C, Objective Description of Variety. d. Exhibit D, Additional Description of Variety. e. X Exhibit E, Statement of the Basis of Applicant's Owner. 1. X Seed Sample (2,500 viable untreated seeds). Date Seg. X Filing and Examination Fee (\$2,150) made payable to 15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE Protection Act.) 16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED (NUMBER OF GENERATIONS? X YES NO 18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE YES (If "YES," through Plant Variety Protection Act X NO	rship. sed Sample mailed to Plant Volume Signature of the United Signature of	Variety Protection Office Lates." Y AS A CLASS OF CERTIFIED SEED? (See LO," skip to item 18 below) D ITEM 16, WHICH CLASSES OF PRODUC INDATION REGISTE	a soction 83(a) of the Plant Varioty Will AAA 16 Sept 1993. TION BEYOND BREEDER SEED?
YES (II "YES," give names of countries and dates) X	oplicable. his sexually reproduced	novel plant variety, and believe(s) that the variety is distinct,
uniform, and stable as required in section 41, and is entited Applicant(s) is (are) informed that false representation h	tled to protection under t	he provisions of section 42 of the P	lant Variety Protection Act.
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR		DATE
Harry & Hamsen)	•	ral Manager/Partner	June 6, 1991
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR 1	TTLE	DATE
(Somedy) m: Poller to	Gene	ial Manager/Partner	June 6, 1991

FORM CSSD-470 (5-89) Edition of FORM LS-470, 3-86, is obsolete.

EXHIBIT A

ORIGIN AND BREEDING HISTORY OF SW 14

SW 14 is a 77 clone synthetic variety selected and developed from a cross of two populations, 1SC88 (CUF 101 plant selections) and 1SUCC88 (U.C. Cibola plant selections). Criteria of plant selection was based upon plant vigor and resistance to aphids and persistence to diseases at Mendota and Tranquility, California. Selections trace to CUF 101 and U.C. Cibola, all of which originated from seed production fields five (5) and three (3) years old respectively. The estimated germplasm sources are as follows: African - 60%, Indian - 20%, Turkistan - 12%, Chilean - 4%, Lodak - 1%, M. varia - 1%, Flemish - 1% and Peruvian - 1%. Breeder seed, (SYN. 1) was produced under cage isolation at Five Points, California in 1988.

TYPE AND FREQUENCY OF VARIANTS

No variants are recognized beyond the limits provided in Exhibit C.

EVIDENCE OF UNIFORMITY AND STABILITY

SW 14 is stable in all distinguishing characteristics when seed is produced within the area of adaptation. SW 14 is as uniform as other alfalfa varieties which are currently accepted for certification by state seed certifying agencies.

EXHIBIT B

NOVELTY STATEMENT FOR SW 14

SW 14 is a very non-dormant alfalfa variety which is distinguished from other varieties in the same dormancy class by unique characteristics as related to growth factors and major resistance to insect pests and diseases.

SW 14 is most similar to CUF 101 in crown type and range of adaptation. The fall growth of SW 14 is not as tall as CUF 101 when compared at Bakersfield, California (Table 1) SW 14 is most similar to U.C. Cibola in fall dormancy and growth patterns. The overall disease and insect resistance of SW 14 is most similar to U.C. Cibola. SW 14 and U.C. Cibola have levels of resistance to Spotted Alfalfa Aphid, Pea Aphid, Blue Alfalfa Aphid, Phytophthora root rot and fusarium wilt. Stand persistence is most similar to U.C. Cibola when compared at Bakersfield, California (Table 2).

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE COMMODITIES SCIENTIFIC SUPPORT DIVISION BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY

ALFALFA (Medicago sativa sensu Gunn et al.)

		· · · · · · · · · · · · · · · · · · ·					
NAME OF APPLICANTIS			TEMPORARY	DESIGNATION	VARIETY NAME		
S and W Seed Comp	any		SW 1	4	SW 14		
ADDRESS (Street and No., or R.F.D. A		Zip Code)				R OFFICIAL USE ONLY	
P.O. Box 235		•		•	PVPO NUMBER		
Five Points, CA	93624			•		100210	i i
DI PACE DEAD ALL INCEDITORIO	NE OLDERIUL		1 1 1 1				
PLEASE READ ALL INSTRUCTIO application variety. Data for quant titative data. Comparative data sho e.g., The Munsell Plant Tissue Color	itative plant char: uld be determined	acters should be based	l on a minimum of 10	00 plants. Include le	eading zeros when nece	essary (e.g., 0 8	9) for quai
1. WINTERHARDINESS:	-				/ · · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
	•			* .	•		
	Very Non-Winterha	ardy (CUF 101) a-Winterhardy (Mesilla)		iardy (Moapa 69) hardy (Lahontan)			
5 =	(Du Puits)			Vinterhardy (Saranac)		•	
	(Ranger) Extremely Winterhi	ardy (Norseman)	8 = Winterhardy	(Vernal)			
TE:	ST LOCATION:	Five Points	and Visali	a, CA	*		
2. FALL DORMANCY:	·	ALL DORMANCY (I	DETERMINED FROM	M SPACED PLANT	INGS)		
	<u> </u>	1 - 1	<u> </u>				·
TESTING INSTITUTION	DATE OF	DATE REGROWTH		REGROWTH SCORE	OR AVERAGE HEIGHT	· .	
AND LOCATION	LAST CUT	SCORED	APPLICATION	CUE 101	CHECK VARIETIES		LSD .05
		<u> </u>	VARIETY	CUF 101	UC Cibola	Moapa	
Kautz Agronomic Services,	9/9/90	10/15/90	11.0	12.5	10.75	9.1	1.32
Visalia, CA				• .	1		
* CUF 101, Moapa 69, Mesilla, Lahontan	, Du Puits, Saranac,	Ranger, Vernal, or Nors	eman as appropriate.	1	.1	·	
Specify scoring system used:				•	•		
Fall Growth Habit (Determin	F-# O	T-:					
		ancy (rials)			4.	•	•
	rect (CUF 101) lemidecumbent (Vei		nierect (Mesilla) umbent (Norseman)	5 = Intermediate	e (Saranac)		
3. RECOVERY AFTER FIRST SPRING	CUT (In Southwest,	first cut after March 21): ·				
1 = Very Fast (9 = Very Slow	CUF 101)		t (Saranac)	5 = Intermediate	e (Ranger)	7 = Slow (Vernal)	
TEST LOCATION	on: Visa	lia, CA	<u> </u>	·	 .		
L AREAS OF ADAPTATION IN U.S. (WI	nere tested and prov	en adapted):				· · · · · · · · · · · · · · · · · · ·	
Primary Area of Adaptation	e e e			Ott	ner Areas of Adaptation	•.	
			•	· ·		. 6	*
	•	÷ .			k	1 ·	Δ
1 = North Centr	al	2 = East Central	3 = Sou	theast	4 = Southwest 5		2
•	Winterhardy Interm	ountain	6 = Winterhardy Inter	mountain	7 = Great Plains		
8 = Other (Speci	ify)	······	<u> </u>		- //	MINITED TO	7 ,
:					• •		(
						\mathcal{A}	J
•						5	
		•					
FLOWERING DATE (When 10% of plan	ts possess open flow	ers at time of first sprin	g cuth:		 		
O 4 Days Earlier Than							
	片	1 - 605	101 -	- Afortii-	2 - C	Jornal E - 41 -	
Same As		1 = CUF	101 2	■ Mesilla	3 = Saranec 4 = 1	Vernal 5 = Nors	ernan
Days Later Than		Visalia	CΔ		•		,
T	EST LOCATION: -	1130110	, UN	<u> </u>	ч		7
	-	· · · · · · · · · · · · · · · · · · ·		* * * * * * * * * * * * * * * * * * * *			

PAGE 2 OF 5

6. PLANT COLOR (Determined	from healthy regrowth 3 w	resics after first so	ring cut, controlling l	eafhoppers if necessar	v):		۲.		
3 1 = Very Dark Gree		2 = Dark Green	(Vernal)	3 = Light Green (f	Ranger)				
COLOR CHART V	ALUE (Specify chart used:				issue (Color Chart	<u>s)</u>		
APPLICATION VA	BIETY: 5/6 (HUF 7.5 GY) 4/6								
VERNAL:		4/6		······································					
TEST LOCATION: 7. CROWN TYPE (Determined		<u>CA</u>				···			
3 Noncreeping Ty		Vernal)	2 = Intermediate (S	aranaci	3 = Narrow (Ci	UF 101)			
Creeping Types		g Rooted (Rangel		5 = Rhizomatous			<u> </u>		
8. FLOWER COLOR (Determine 1 0 0 % Purple and Vi	ne frequency of plants for o		defined by USDA A		No. 424 (Barn asses 2.3 and 2		plants in plot to flower):		
% Variegated Ot	her Than Blue (Subclasses	2.1, 2.2, 2.5 to 2.	.9)	% Yellow (Sut	classes 4.1 to	4.4)			
% Cream (Class	3)	•		% White (Class	5)				
TEST LOCATIO	_{on:} <u>Mendota, (</u>	CA		<u> </u>	_	-			
9. POD SHAPE (Determine free	quency of plants with the fo	ollowing pod shap	oes produced on well	cross-pollinated racem	es):				
90 % Tightly Coiled	(One or more coils, center	more or less clos	ed)]	0 % Loosely Coi	led (One or mo	ore coils, center conspi	icuously open)		
% Sickle (Less th	an 1 coil)			TEST LOCAT	ion: <u>Me</u>	ndota, CA			
							c generation tested, average severity		
: xební sulave	scores (ASI), least significa tion. Describe scoring syste	nt difference stati em, and any test (istics (LSD .05), the in procedure which diffe	nstitution in charge of irs from standard meti	itest, year, and rods proposed	l location of test, and by Eigin (1982). Tris	whether test is a field or laboratory at data from other test years or		
Seeds o	ons should be presented who of the check varieties and g	ermplasm lines lis	ted below can be obta	nined from the USDA	Field Crops L	aboratory, Bldg. 001,	Rm. 335, BARC-West, Beltsville, MD		
20705 presen		ith check varieties	s listed below are pref	erred, comparisons w	ith any approp	riate check variety rec	commended by Elgin (1982) may be		
A. DISEASE RESISTANCE: DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY		
Anthracnose, Race 1 (Colletotrichum trifolii)	Application	SYN 2	-0-	143	5.0	LSD (.05)	Crop Characterist		
	Arc (R)	AD (D)	55	101	2.0	0.20	Manada R 2 7 3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		
		: AR (R)	55	121	3.0	0.38	Northfield, MN		
	Saranac (S)		-0-	130	5.0				
	SCORING SYSTEM:		0		D4		e and the second		
Anthracnose, Race 2	Plants sc	orea I o	<u>r 2 with n</u>	o symptoms I	= Kesi	<u>stant</u>	- 807		
(Collectotrichum trifolii)	Application								
	Saranac AR (R)						**************************************		
•	Arc (S)		. ,			•			
en e	SCORING SYSTEM:	- 4		·			Aven 1 - grow		
					·				
Bacterial Wilt (Corynebacterium insidiosum)	Application	SYN 2	5.38		3.85	LSD (0.5)	D.K. Barnes,		
	Vernal (R)		42.0		2.25	0.41	University of MN		
•	Narragansett (S)		8.32		3.85		, O) 1		
	SCORING SYSTEM:				0.00				
	Plants so	cored 0-	5 (0=+1) =	Resistant			4,40		
Common Leafspot (Pseudopeziza medicaginis)	Application					I A z	Contraction of the second		
	MSA-CW3AN3 (R)			-	٠	नि दू	2 10		
	Ranger (S)						POR SUPERIOR		
	SCORING SYSTEM:					₹ Çû	marile 5		

DISEASE	VARIETY	SYN. GEN TESTED	RESISTAN		o ASI	ASI LSO .05	INSTITUTION, YEAR, LOCAT
Downy Mildew	Application		PLANTS	- CARTO TESTE	-	202.00	
(Peronospora trifoliorum)						-	
Isolate, if known:	Saranac (R)						
	— Kanza (S)						
	SCORING SYSTEM	:					
Fusarium Wilt (Fusarium oxysporum 1. medicaginis)	Application	SYN 2	70.44		1.75	LSD (0.5	D.K. Barnes
	Moapa 69 (R)		76.66		1.56	14.08	University of M
	Narragansett (R)						
•	SCORING SYSTEM:	 	<u>, I</u>			<u> </u>	1
Physical at a 2	Plants s	cored 0-	5 (0 + 1)	= Resistan	t		
Phytophthora Root Rot (Phytophthora megasperma f. medicaginis)	Application	SYN 2	16.13		4.32	LSD (0.5)	
	Agate (R)	<u> </u>	43	:	3.29	15.97	
	Saranac (S)		1.74		5.28		
	SCORING SYSTEM:	cored I-		= Resistant			
Verticillium Wilt (Verticillium alboatrum)	Application	<u> </u>	1 2/	inco i a cuit	9		
	Vertus (R)	 					
	Saranac (S)						
٠.	SCORING SYSTEM:		<u> </u>		 		
Other (Specify)	Application						
	(R)						
	(5)						
	SCORING SYSTEM:		F		: :		<u> </u>
ther (Specify)	Apoliogeica]		1			
	Application						·
	(R)		, st				
	(S)						
_	SCORING SYSTEM:				·		
SECT RESISTANCE:	VARIETY	SYN. GEN. TESTED	PERCENT DEFOLIATION	DEFOLIATION IN PERCENT OF RESISTANT CHECK	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION FIELD OR LABORATORY
falfa Weevil ypera postica)	Application					e e	
	Arc (R)			100			
	Saranac (S)		·				
	SCORING SYSTEM:					<u>_</u>	· · · · · · · · · · · · · · · · · · ·

10, 8, INSECT RESISTANCE	(Continued):						7100210
INSECT	VARIETY	SYN. GEN. TESTED	PERCENT SEEDLING SURVIVAL	NUMBER OF SEEDLINGS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION FIELD OR LABORATORY
Blue Alfaifa Aphid (Acyrthosiphon kondoil	Application	SYN 2	25.71		3.99	LSD (0.5)	John Caddell
	CUF 101 (R)	· · · · · · · · · · · · · · · · · · ·	45.00		3.70	8.42	Oklahoma State Un
	PAT 181 ARC (s)	3.81		4.3		
	SCORING SYSTEM:	racistan	t nlante -	total of c	classos	1 2 2 2 1	
Pea Aphid (Acyrthosiphan pisum)	Application	SYN 2	84	178	143,31.3		Crop Characterist
	-KonzotA+ CUF	101	83	162		0.53	Northfield, MN
	Ranger (S)		4	173			
	SCORING SYSTEM:	7	, , ,				
Spotted Alfalfa Aphid	Resistanc	<u>ce classe</u>	S, 1-5, 1	<u>-4 = Resist</u>	ant		
(Therioaphis maculata)	Application	SYN 2	24.99			LSĎ (.05)	John Caddell
Biotype, if known: Southern	Kanza (R)		70.00			10.55	Oklahoma State U
San Joaquin	Ranger 4S1 TEAM	(s)	0.42				· .
Valley Biotype	SCORING SYSTEM:	of surviv	vina seedl	inac			
TATTET DIOCYPE	T ELCEIL C		PERCENT	17195]		
INSECT	VARIETY	SYN. GEN, TESTED	RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION FIELD OR LABORATORY
Potato Leafhopper Yellowing (Empoasca fábae)	Application						
	MSA-CW3An3 (FI)					:	
	Ranger (S)						·
	SCORING SYSTEM:						
Other (Specify)	Application						
	(R)						
	(S)						
	SCORING SYSTEM:				· · · · · · · · · · · · · · · · · · ·		
NEMATODE RESISTANCE:	· · · · · · · · · · · · · · · · · · ·	. 1	· · · · · · · · · · · · · · · · · · ·	1	· 1	i i	
NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD ,05	INSTITUTION, YEAR, LOCATION FIELD OR LABORATORY
Northern Root Knot (Meloidogyne hapla)	Application						
	Nev. Syn. XX (R)					V _o	STITE OF THE STITE
	Lahontan (S)						
	SCORING SYSTEM:					13 2	1 3 Mg
· · · · · · · · · · · · · · · · · · ·						91,00	100 1991 A

NEMATODE	VARIE	TY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTE			ASI SD .05	INSTITUTION, YEAR, LOCATION FIELD OR LABORATORY
Southern Root Knot (Meloidogyne incognita)	Application								
	Moapa 69 (R)								
	Lahontan (S)				ļ				
	SCORING SYS	TEM:							
Stem Nematode (Ditylenchus dipsaci)	Application				8.				
	Lahontan (R)								
	Ranger (S)								
	SCORING SYS	тем:				-,. I			
Other (Specify)	Application								,
	(R)								
	(S)								
	SCORING SYS	TEM:							
INDICATE THE VARIETY	THAT MOST CLO	SELY RESE	MBLES THE	APPLICATION V	ARIETY FOR EACH	OF THE FOLL	OWING CH	ARACTE	RS:
CHARACTER VARIE		VARIETY	CHARACT		BACTER	CTER		VARIETY	

Winterhardiness Plant Color **CUF 101** CUF 101 Recovery After 1st Cut Crown Type **CUF 101** CUF 101 Area of Adaptation Combined Disease Resistance CUF 101 UC Cibola Flowering Date Combined Insect Resistance **CUF 101** UC Cibola

REFERENCES

Barnes, D.K. 1972. A System for Visually Classifying Alfalfa Flower Color. U.S. Dep. Agric. Handb. 424. 18 pp. (Note: Greenish cast of plate 6, A and B is an artifact of printing, actual colors a blend of yellow and white.)

Efgin, J.H., Jr., (ed.). 1982. Standard Tests to Characterize Pest Resistance in Alfalfa Cultivars. U.S. Dep. Agric. Tech. Bull. (In Press).

Gunn, C.R., W.H. Skrdla, and H.C. Spencer. 1978. Classification of Medicago sativa L. using legume characters and flower colors. U.S. Dep. Agric. Tech. Bull. 1574, 84 pp.

Munsell Color Co., 1977. Munsell Plant Tissue Color Charts. Munsell Color Co., Inc. Baltimore.

NOTE: Any additional descriptive information and supporting documentation may be provided as Exhibit D.

TABLE 1 - FALL HEIGHT MEASUREMENT (INCHES)

VARIETY	BAKERSFIELD, CA.
SW 14 CUF 101 UC Cibola	11.00 12.50 10.75
LSD (.05)	1.32

TABLE 2 - STAND PERSISTENCE, BAKERSFIELD, CA.

VARIETY	SEEDED 11/88 % STAND				
	5/89	9/90			
SW 14	100	78 65			
CUF 101 UC Cibola	100 100	65 75			
LSD (.05)	•	11.17			

EXHIBIT D

CHARACTERISTICS OF SW 14

SW 14 is a very non-dormant variety developed for forage use in region 4 where winter injury is not a major varietal characteristic. It is similar to U.C. Cibola in fall growth, and most similar in appearance to CUF 101. SW 14 has high resistance to pea aphid and fusarium wilt; moderate resistance to Blue Alfalfa Aphid and Spotted Alfalfa Aphid, and low resistance to phytophthora root rot. It is susceptible to bacterial wilt and anthracnose.

EXHIBIT E

The alfalfa variety SW 14 was developed by S and W Seed Co.; a partnership, and Kautz Agronomic Services. By agreement between S and W. Seed Co. and Kautz Agronomic Services, all rights to varieties developed in the breeding program belong to S and W Seed Co. none are retained by employees or the contractual breeding services of Kautz Agronomic Services.